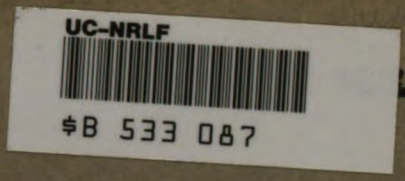
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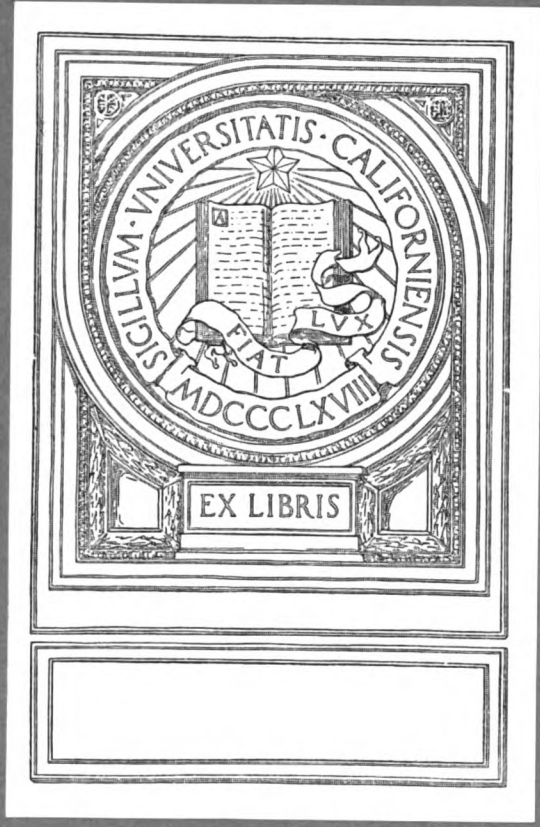
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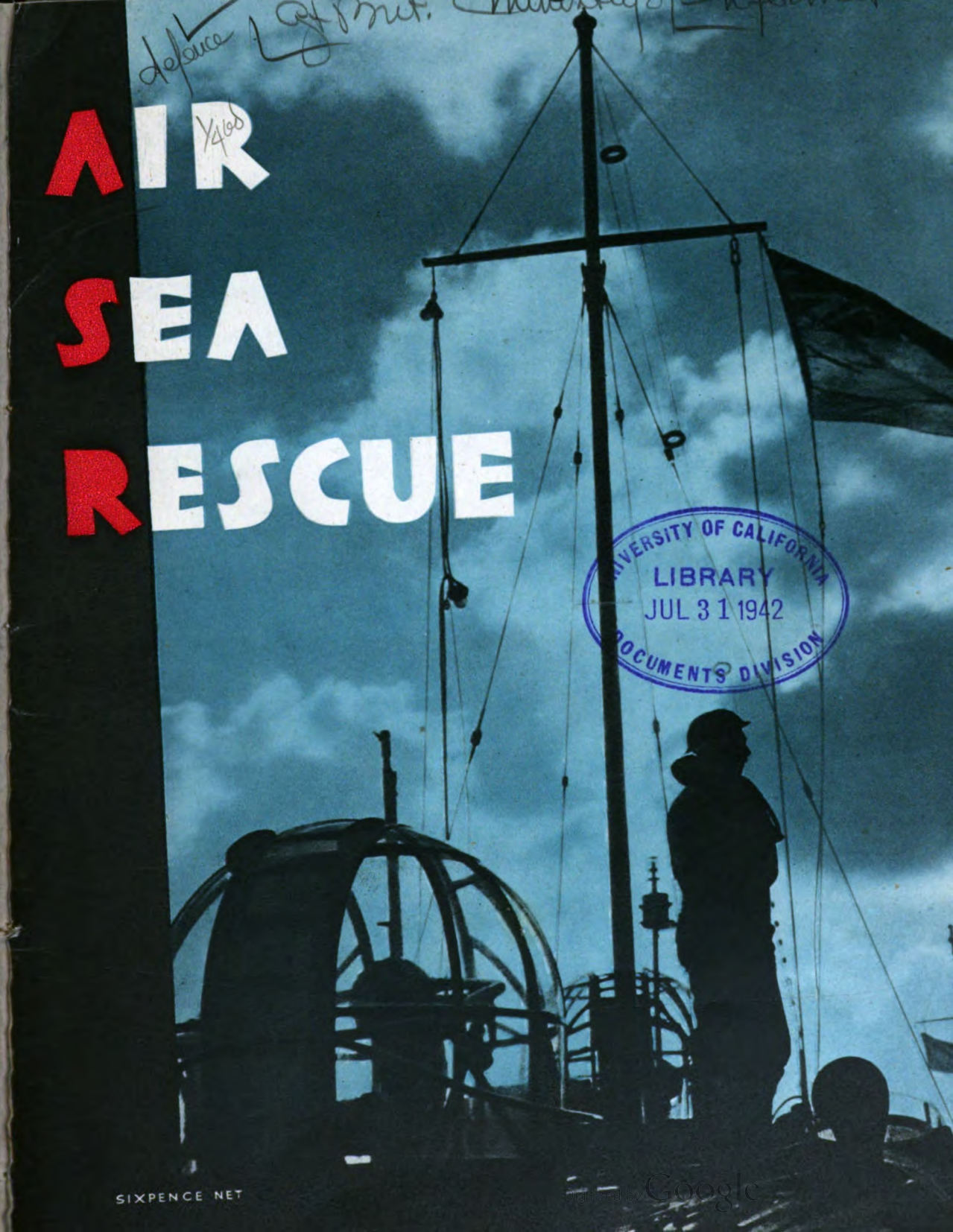


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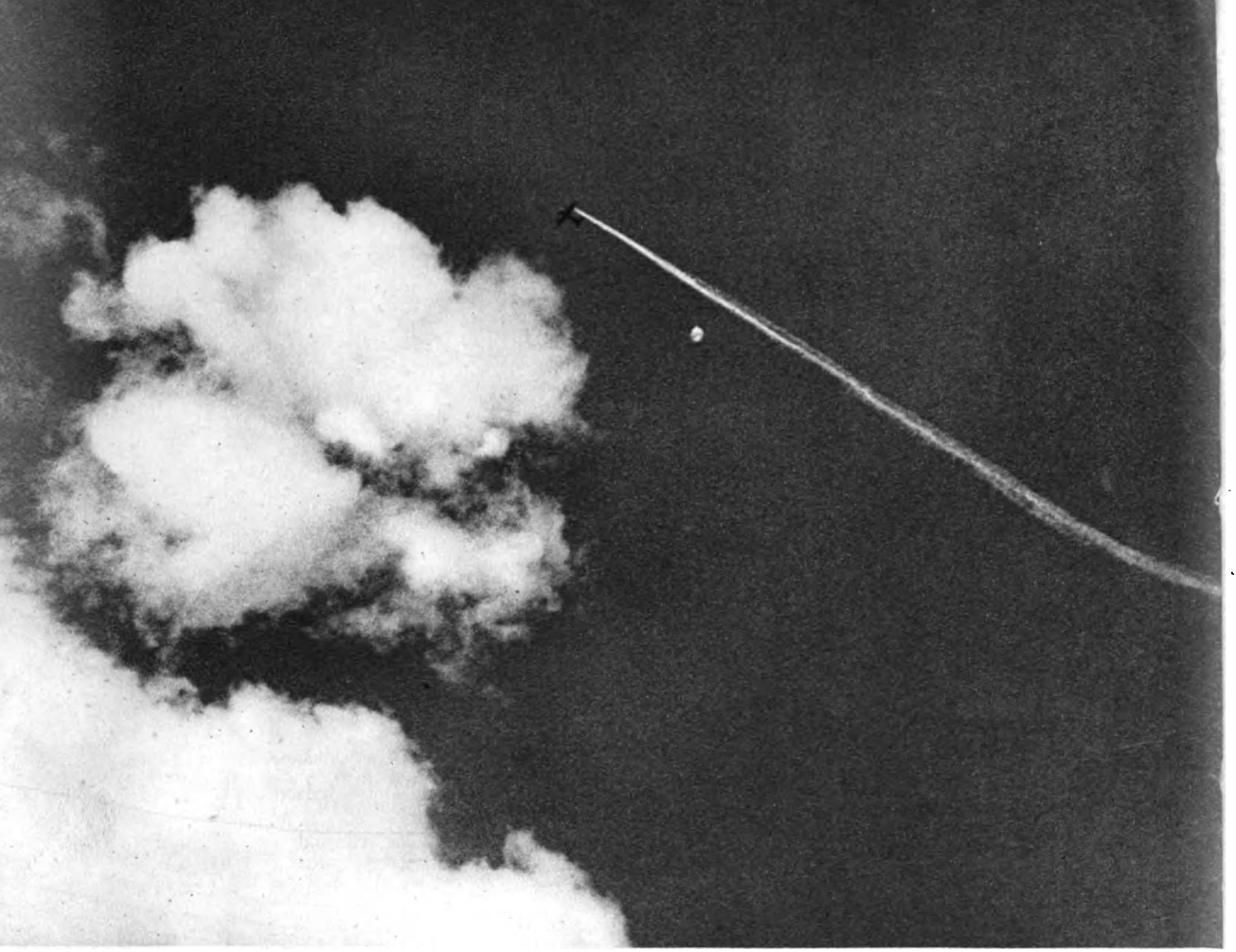
AIR SEA RESCUE



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AIR-SEA RESCUE

I. "I Hit the Water"

"I DIVED behind one of the Messerschmitts and opened fire at 200 yards. But I did not see the other Messerschmitt coming in on my right. Suddenly my windscreen was covered with oil."

The Polish Sergeant-Pilot of the Spitfire was then half-way between Lille and the Channel. His engine began to run more and more roughly as the oil drained out of it, and about eight miles out from the French coast it stopped. He decided to land in the sea, for by that time he was too low to bale out.

"I hit the water with my tail and then my Spitfire leaned forward and sank like a stone. I went down with it. Something struck me underneath the eyes so that I could not see. When I opened them it was very dark. I got out through the top of the cockpit, but it was very hard to do so because of the parachute strapped to me on which I was sitting. Before I got out I went down very deep. I could not breathe. I thought it was finish with my life."

On reaching the surface the pilot succeeded in disengaging his parachute harness. "The sea," he says, "was quiet. I pulled the string of the dinghy, opened the bottle of gas and waited for the dinghy to blow up, which it did very easily. I tried three times to climb on to it but it kept on shooting up in the water because I had forgotten to push it forward so as to fill the water pocket in its nose. When I remembered to do this I climbed in easily."

It was then about quarter to one in the afternoon of a Wednesday in June, 1941. It was a fine, sunny day. The pilot was warm and his clothing soon dried. He tried to paddle towards England with his hands, but could make little progress. His hopes of rescue, however, were high. Fighter sweeps were going on at frequent intervals, and he felt sure that someone would see him.

The afternoon wore on. He could hear aircraft at frequent intervals going and returning, but he could not see them; they were too high, or perhaps it was because of his eyes, which had been injured and were bleeding. About 8.0 in the evening he made up his mind that he was in the dinghy for the night. The sea got up. Soon he was very cold and the dinghy shipped much water, which he baled out with his hands. The storm subsided about 2.0 in the morning. "All night I lay shivering, waiting for the sun to rise. Presently the sky turned red. It was very nice. When the sun was high I took off all my clothes, though this was not easy to do in the dinghy, and dried them. They took two or three hours to dry. When they were ready I put them on and tried to sleep."

He dozed, with long waking intervals, throughout that summer day. Once more aircraft passed above his head, but they could not see him nor he them. Towards evening

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he saw a German float boat of the kind moored by the enemy in the Channel to provide those who are shot down with a temporary refuge in the sea. It was too far off, and he could not reach it. The second night came down, and once again the sea got up, subsiding as on the first night an hour before dawn. Once more the pilot was soaked and spent the morning in drying his clothes. He still felt confident of rescue. "All that day aircraft were flying to and from France and I felt sure someone was bound to see me, and then what a surprise it would be for my friends. No one did see me."

At 7.0 o'clock in the evening he saw another float boat; this one was British. He left his dinghy, tied it to his "Mae West" and began to swim towards the boat. The distance was eight hundred yards. He had not the strength to reach it, and climbed once more into his dinghy as the sun was setting. He had now been two days in the sea in a rubber craft the length of a man's body with a freeboard of about 8 inches.

"I Knew they had Seen Me"

The third night was a repetition of the other two, with rough seas and the added discomfort of rain. Once more when dawn broke the pilot took off his clothes and spent the morning drying them. He did not feel hungry, but his thirst was very terrible. "There was plenty of water all around me in the Channel, but it was too sour to drink." He spent the day thinking about the Sergeants' Mess and the beer he drank in it with his friends, and how he was wont to grumble at the food, which was English and not what he liked.

Throughout the morning of the fourth day more sweeps went over him towards France. By this time he was beginning to think that unless some aircraft flew low he would not be seen. A number of Blenheims went out about 1.0 o'clock in the afternoon. "On their return their engines had a different voice because they were low. They passed some six hundred yards to my right, but nobody saw me. Presently another Blenheim came flying from France with a Hurricane escorting it. They came straight for me, very low. Then they both made a turn and I knew they had seen me. The Blenheim went on, but the Hurricane flew round and round me. I saw its number painted on it and knew it to be one of the Polish Squadron."

Forty minutes later a Lysander, escorted by three Spitfires, was over him, and within an hour an Air-Sea Rescue motor launch was alongside his dinghy. "I thought I could climb on board, but found I couldn't, so two of the crew pulled me up. The officer was about to give me a glass of rum, when he asked me when I had had my last food. I said 'Wednesday.' He said, 'Good God, to-day is Sunday,' and I said 'Yes,' so he gave me only water with just a spot of rum in it." They made him lie down, gave him a piece of dry bread, then a slice with butter and jam on it, and presently a glass of water followed by one of rum and water mixed. They landed him at a Kentish port where he was taken to hospital. An hour later that same launch had rescued another Polish airman who was put in the next bed. "He was pleased to see me, but told me that all my kit had been divided up among my friends." This Polish Sergeant-Pilot was on operational duties again within a fortnight of his rescue.

He would have been rescued far sooner but for circumstances beyond the control of the Air-Sea Rescue Service. Through no fault of his own he had become a straggler, for his engine had been hit while still some twenty miles over Northern France, and he had dropped behind so that when he fell into the sea seven miles from the French coast no one saw his fall. Finally his wireless signal never got through to base. A combination of such misfortunes may defeat the best-laid plans of rescue.

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2. When the Airman Comes Down

WHAT IS THE ORGANISATION which makes these plans and takes our airmen from the sea with steadily increasing success? It is the Air-Sea Rescue Service controlled by the Directorate-General of Aircraft Safety in the Air Ministry. Before describing it and its origins and the part played by the Royal Navy, which is as much concerned with the work as is the Royal Air Force, it is first necessary to understand clearly the problems confronting the joint authorities in charge of this vital service.

They are four in number. First, the airman must be provided with the means of remaining on the surface of the sea. Secondly, he must be able to keep himself alive while in that situation. Thirdly, he must be found. Fourthly, he must be brought safely to land. These four problems are intimately connected, but for the sake of clarity they may be treated separately.

There is, however, a preliminary problem. How is the airman to alight without injury to life or limb? There are only two ways in which a pilot or a crew can alight on the sea. Either they can bale out or the aircraft can be landed on the surface—"ditching" as it is called. The first method is not often used by bomber crews, their aircraft generally keeping afloat for a sufficient time to allow them to take to the dinghy. Pilots of Fighter Command, however, returning from sweeps over Northern France or from combat around our coasts, frequently find it less dangerous to abandon their aircraft and take to their parachutes than to remain in the aircraft and sustain the very severe shock which is experienced when a fast fighter alights on the sea. Moreover, the Spitfire or the Hurricane, owing to the weight of its engine, almost always sinks immediately, and many a pilot has found himself trapped and only able to make his way to the surface with the utmost difficulty.

The shock when an aircraft, be it a fighter or a bomber, strikes the water is tremendous, even though it is landed at the lowest possible speed and in a stalled position so that the tail is the first part of it to strike the water. "He tried to pancake but hit a wave and the machine stopped as though up against a brick wall." "On striking the water he received a head injury and lost consciousness for a few seconds. The position of the scalp wound is consistent with his head having hit the edge of the right-hand perspex corner panel. When he came to, the water was up to his shoulders." . . . "It was like hitting a stone wall. The machine stopped absolutely dead." . . . ". . . landing shock severe. It broke the forebody, apparently bending it, as a deep crack or crease appeared along the top surface of the fuselage roughly in line with the wing leading edge." . . . "The water rushed in below the first pilot and along the aircraft. Both engines were twisted off backwards." . . . Such sentences as these are to be found in almost every report of a landing at sea.

The crew of a bomber are told to brace themselves against the main strut or bulkhead or some portion of the aircraft which will not collapse when it strikes the water. Ropes are also provided to which to cling. This bracing of the body is strongly impressed on all crews. A semi-conscious or unconscious airman with

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Safety devices. Life jackets and skull caps are yellow, the colour which shows up most clearly against the surface of the sea.



Smoke signals : the canister releases a cloud of orange smoke visible over 30 miles away.



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Fluorescine is used to colour the sea a yellowish - green.



Equipment for safety. The dinghy pack, 15″ square by 3″ thick, contains self - inflating dinghy, sea-anchor, rations, signals, repair kit, baler, cigarettes.

An air crew practises dinghy drill



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a limb or two broken adds to the liabilities of a crew struggling to enter a dinghy, and if he be alone in the aircraft his chance of rescue is infinitesimal.

Safety Devices

If the descent into the sea is made by parachute, the airman, when about a hundred feet from the water, rotates the quick release button on his parachute harness. Then, when within a few feet of the surface, he straightens his body, puts his feet together, holds his nose and pulls his elbows well into his sides. As his feet touch the water, he strikes the button which releases his parachute harness and takes a grip of the lanyard to which his dinghy pack is attached. Once in the water the airman can keep afloat by means of his life-saving jacket, universally nicknamed his "Mae West," or more often by means of a rubber dinghy automatically inflated.

In fighter aircraft the dinghy forms part of the parachute pack on which the pilot sits, and it is attached by the lanyard to the all-important "D" ring on the pilot's "Mae West." A bomber's dinghy is in most cases carried in the wing and is inflated and shot out automatically when the aircraft alights on the sea. The dinghy is inflated by a bottle of CO_2 which is opened by an automatic immersion switch. If this fails, the same result is achieved by manual means. Should there be a leak it can be plugged with special stoppers, and air pressure can be maintained in the dinghy by means of a hand inflator similar to those used to inflate a Li-Lo. The dinghy is attached to the aircraft by a painter which will snap when a certain breaking strain is reached, so that the dinghy will not sink with the aircraft.

Dinghies are of various types. The "K" type is the single-seater used in fighter aircraft. It carries a waterproof sheet which can be pulled up to the chin, thus completely covering its occupant. It was on 16th June, 1941, that the first pilot to be saved by this type of dinghy was picked up. Other types are fitted in bombers, some big enough to hold a crew of six. In such bombers as Stirlings and Halifaxes and in flying boats, all of which have a larger crew, more than one dinghy is carried. With the dinghy is an emergency pack containing rations, water, first-aid appliances, a yellow flag on a collapsible pole and packets of Fluorescine, a chemical substance which can be used to colour the sea round the dinghy a yellowish-green which shows up well from the air. Attached to the pack or to the dinghy are paddles. They fit over the hands and look like large fingerless gloves.

Dinghy Drill

The crews of bomber and fighter aircraft are taught a dinghy drill which varies somewhat according to the type of aircraft. The object of the drill is to ensure that every member of the crew should understand what action is likely to be required. Land aircraft rarely remain on the surface of the sea for more than a few minutes. That they do not sink at once is due to the flotation gear with which some of them are fitted. It consists of a number of balloonettes automatically inflated which will keep the aircraft from sinking for the short time it should take for the crew to enter the dinghy. A well-drilled crew, every man of whom knows what to do and does it, obviously has a better chance of rescue than one composed of eager but uninstructed amateurs. There is one rule for everyone. A wet necktie will shrink and may partially strangle its wearer, and the same is true of a collar. These are, therefore, to be removed or loosened beforehand. Every member of the crew is required to wear a yellow skull cap and a yellow life-jacket or "Mae West," and the kapok lining gives enough buoyancy to make it possible for the wearer to blow it up after quitting the aircraft. If a man should blow it up before, he may stick in the door or the astro hatch when leaving the aircraft.

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Each member of the crew should know what his own particular duty is before, during, and after ditching. Thus, for example, the wireless operator is responsible for taking with him the Very light pistols, destroying the secret papers, and stowing in the dinghy the carrier pigeons and the distress signals. The rear gunner will throw out the dinghy valise with the help of the second pilot. He must be the first man on board the dinghy, and if it inflates in an inverted position he must jump into the sea and right it. He must also, if necessary, top it up with air, using the bellows provided for that purpose. The other members of the crew have other special tasks to perform. The dinghy drill looks well on paper and is easy to perform inside a hangar. In a rough sea, in darkness, however, it is, as King William the Fourth was wont to say of any problem confronting him: "Quite another thing." The motto of every bomber crew is and must be disciplined self-help.

A Diary of Endurance

The importance of this drill can be realised by examining the two following cases. They are described in official reports, which have been very slightly altered for reasons of security. The first concerns a Hampden, ditched sixty miles East of Yarmouth at 03.20 hours. All the crew were saved after spending nine days afloat in their dinghy.

This aircraft was on its way to Dusseldorf. Ten miles out from the Dutch coast, the port motor began to fail. At this time the aircraft was flying at 17,000 feet. The captain immediately jettisoned his bombs "safe." He then had a look around the cockpit and endeavoured to find the cause of the engine failure. There was no indication of the reason for failure, except that the boost read a drop from $-\frac{1}{2}$ to $-2\frac{1}{2}$ lbs.

A few minutes later the port engine failed completely amidst showers of white sparks and large blue flames from the exhaust. The aircraft was now well out to sea and the pilot considered that he could easily manage since he had already done a return journey on one motor. He lost 11,000 feet, however, because he got into a stalled position on two occasions.

The wireless operator transmitted an S.O.S. which was unfortunately not received; probably the aerials were carried away when the guns and ancillary equipment were jettisoned. The crew were ordered to brace themselves at crash stations. The flaps were up. The pilot endeavoured to maintain height as long as he could and when the altimeter read zero he decided to ditch.

He lowered his speed to 80 m.p.h. on the air speed indicator and approached the water in a westerly direction, which was across wind. The trimmer was right back to the tail-heavy position. Cloud 7/10, 1/3 moon, water visible. The wind was 10–15 m.p.h. and the water was smooth.

The pilot held off and touched the water first with his tail. The touch-down was very heavy and led the wireless operator to suppose that they had landed on a convenient beach; he therefore jumped out on to the wing. When the aircraft came to rest, the nacelle-stowed dinghy inflated by action of the immersion switch. The dinghy inflated upside down.

The captain was second out of the aircraft, and as he left, he closed the cockpit hatch, thereby freeing the astro hatch. He then jumped into the sea to right the dinghy, which he succeeded in doing, but brought it over upon himself. During this drill he swallowed a lot of water which subsequently made him very sick. The rest of the crew came to the captain's assistance and, having boarded the dinghy, they hauled him aboard also.

The aircraft was gradually sinking, and no sooner were they all safely in the dinghy than the Hampden went under. The aircraft floated for two minutes. And so dawn broke upon their first day adrift.

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1st Day Afloat. When they had taken stock of available rations they found that in all there were thirty-six Horlick's tablets, some concentrated chocolate and one bottle of water containing one and a half pints. The marine distress signals were found to be unserviceable. Sergeant A., the captain, was soaked through, and very sick all day. Sergeant X. was dry, but sick from swallowing sea water. Both Sergeants Y. and Z. were dry and well. Sergeant A. decided to ration water and food in case they were adrift for several days. In the morning and evening each had a half a Horlick's tin-lid of water and three Horlick's tablets each. The first day closed without incident. The weather was warm enough for the crew to be unaffected by cold.

2nd Day Afloat. Nothing of importance occurred until about 18.00 hours, when two Wellingtons passed on an easterly course at about 2,000 feet. The sea was rough all day and much time was spent in baling. The day was passed away by various means, one of which was a game to see who could keep his head below water longest. While Sergeant X. was on one of these submarine excursions he suddenly surfaced and exclaimed, "Hi! there's a bloody great mine underneath." Now they all realised the reason for the absence of shipping. Sergeant A. had now recovered from his sickness. Water ration, half a tin-lid morning and evening; three Horlick's tablets each.

3rd Day Afloat. The sea was still running sufficiently high for baling to be continued. All clothing had become dry and sickness was no longer experienced. The crew kept cool by throwing water over each other. Neither ship nor aircraft was sighted during the day. Water ration, half a tin-lid morning and evening; three Horlick's tablets each. They also sucked boiled sweets at odd times during each day.

4th Day Afloat. On this day the water ration was halved. During the latter part of the morning three Blenheims passed in formation two hundred yards away at about 150 feet proceeding in an easterly direction. The mirrors which the ditched crew had with them were brought into play. As they drew near, the formation appeared to break slightly, and the dinghy crew thought they had been observed. They surmised that the Blenheims would return later, but after anxious waiting they did not return. Water ration, half a tin-lid once during the day.

5th Day Afloat. This day passed without incident. It was decided to paddle in a westerly direction using the unserviceable marine distress signals as paddles. The dinghy paddles were not in the dinghy. Since Sergeant X.'s watch was still going, they were able to divide up the paddling into half-hour shifts. Water ration, half a tin-lid once during the day; half a cube of chocolate each three times during the day.

6th Day Afloat. At midday great excitement was caused when three launches were seen quite close, but all hope was lost when the possible rescuers turned northward, and were seen no more. The crew observed many green flies and wasps, which caused them to suppose they were close to land and probably off the Thames Estuary. Water ration, half a tin-lid once during the day; half a cube of chocolate three times during the day.

7th Day Afloat. By the evening the water ration ran out. Sergeant A. swilled his mouth out with salt water; his tongue was getting hard and thick and skinning. The others also swilled out their mouths.

8th Day Afloat. The whole crew were now beginning to feel very weak. The day passed with one incident. A Hampden passed overhead at about 2,000 feet escorted by two Hurricanes. The mirrors were flashed without success.

9th and last Day Afloat. Rescue. All were feeling very weak and considered that they had "bought it." Sergeant A. found that he was no longer able to stand in the dinghy.

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At 08.30 to their great relief a Hampden was sighted. The mirrors were again brought into play and the aircraft began to circle flashing " Help coming " on the Aldis lamp. The Hampden dropped a Lindholme Dinghy which was reached by the crew. The water bottle was a godsend. Two Blenheims escorted by fighters then arrived and relieved the Hampden, which had been circling for four hours. At 12.30 an R.A.F. high speed launch arrived and picked up the crew.

" One of our Aircraft Failed to Return "

Here is the second case.

SIR,

I have the honour to submit the following report, concerning the crash of Hampden No. ——, and the subsequent survival of the crew by dinghy.

On the evening of the . . . August, 1940, the Hampden took off at 20.59 for a bombing attack on Berlin. I, as pilot, climbed on our course at −1 lbs. sq. inch boost in weak mixture until we reached 15,000 feet. I then throttled back to −2½ lbs. sq. inch boost and continued at this height until the target area was reached. At 01.15 Berlin was identified.

Bombs were dropped in the south-east quarter of Berlin at 01.25. We left at 01.45.

On the way back no landmarks were visible due to 9/10th stratus cloud.

At 05.45 the navigator informed me that we were forty minutes overdue and, since the English coast was not yet in sight, it became apparent that we were in danger of running short of petrol.

I instructed the wireless operator to obtain a " fix." This revealed our position to be sixty-five miles from Flamborough Head.

By now the petrol gauges showed that there were only 38 gallons of petrol left. Our height at the time was 4,000 feet. I gave orders to the crew to jettison all ammunition pans and their guns to lighten the aircraft.

At 06.05 the starboard engine began to splutter and subsequently failed. After three minutes it picked up again and functioned for a further three minutes and then failed again. I managed to make it pick up once more by rocking and skidding the aircraft. After the first failure I instructed the wireless operator to commence the S.O.S. procedure. At 06.20 both engines failed. I ordered the crew to take up their positions for a crash landing in the sea, and to make sure the dinghy was in a position for an easy removal. The navigator took up his position behind me, opened the astro hatch, helped me buckle my Sutton harness and released one pigeon.

Our height was now 50 feet. I ordered the crew to stand by for the crash. I opened my sliding roof, switched off the engine, and held off until the airspeed dropped to 65 m.p.h., when the aircraft stalled, sinking into the water with the tail well down. The flaps and undercarriage were up. On contact with the water the aircraft skimmed along the surface without bouncing or ducking.

A deluge of water entered my cockpit, preventing me observing the subsequent behaviour of the aeroplane, which came to rest in a very short run, floating slightly nose down and on even keel.

I pulled off my helmet and unbuckled the harness. On looking round I saw the navigator on the port wing, and the observer struggling to make an exit through the astro hatch which was partially blocked by the sliding roof over the pilot's cockpit. I pulled this closed again to allow him to get out. I again opened it and jumped on the wing myself and ascertained that the navigator and observer were uninjured.

The wireless operator, who had been washed out, was struggling in the water on the starboard side of the aircraft, between the mainplane and the tail unit. He was in a dazed condition from a blow received on the back of the head. The navigator and myself lifted the dinghy through the astro hatch. I then

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pulled it on the wing and it inflated immediately. We lifted it into the water and I swam with it and assisted the wireless operator into it.

The navigator then swam with the observer to the dinghy, the observer being unable to swim. This was accomplished by a great effort on the part of the navigator as both the observer and he were in full flying clothing.

The dinghy was not easy to enter owing to lack of hand rails.

The aircraft now sank nose first after remaining afloat for approximately three minutes. We remained still in the dinghy until we had recovered from the exertion. Later we sorted ourselves out into the most comfortable positions which the very limited space permitted. We endeavoured to keep ourselves warm by baling out the dinghy with a forage cap and flying boot.

There now remained little to do but wait patiently to be found. Our spirits rose when we saw the first aircraft searching for us at about 09.00. This proved to be an Anson a considerable distance away. I let off one of the signal cartridges but failed to attract its attention. The navigator at this stage was violently seasick and remained so until we were subsequently rescued. The next aircraft to be seen was a Hudson at approximately 10.00 hours, followed half an hour later by a Hampden; both aircraft were searching too far north and failed to find us.

The dinghy was now very low in the water and we connected the hand pump to the appropriate connection, losing a considerable amount of air in the operation. On pumping the dinghy full again it did not rise to its former level and we were partially awash for the next four hours. Finally a Hudson flew dead over us on its course at approximately 800 feet. We waved. I tried to let off the last signal rocket, but it failed to ignite. The Hudson gave us no indication that it had seen us.

About twenty minutes later we saw an R.A.F. high speed launch a quarter of a mile away. We waved frantically with a strip of fabric and shouted. We thus attracted its attention and were picked up in a somewhat exhausted condition and finally landed at Grimsby.

3. The Search for Survivors

FLOATS AND BUOYS are nearly as important as dinghies in rescue work. A float is a boat-shaped hull 30 feet long painted bright red and orange. It is oblong in shape, and is fitted with grids and bars extending below the water line so as to act as foot and hand-holds. The stern of the float is cut away at an angle so that the ladder over it hangs straight and can thus be climbed more easily. The sides are raised so as to give some protection to a man lying on the deck, should he be too exhausted to enter the cabin immediately. The floats, which are moored at intervals round our coasts, are equipped with signalling apparatus, food (preserved meat and vegetables, biscuits, tea, cocoa, sugar, brandy or rum, drinking water) and a Primus stove on which to cook. There are also complete changes of underclothing, sleeping bags, towels and washing gear. To while away the time before the rescue craft arrives, there are cigarettes and matches, books, magazines, games such as chess and draughts, and playing cards. The float is indeed a home from home, the object being to supply everything to reduce the physical and mental shock of a forced and

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Air-sea rescue floats, painted bright yellow and red, are moored at many points in the Channel. Note the sloping ramp, fitted with handles, enabling the airman to haul himself on to the float.

Inside the rescue float, there are dry clothes, bunks, food, a cooking-stove, books, cigarettes, and — most important of all — a radio set by which the airman can get in touch with the shore.





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sudden landing on the inhospitable sea. It can hold at least six men.

In addition to the float, which has been specially built for its purpose, advantage has been taken of the large number of buoys to be found outside our harbours and estuaries. Many of these have been equipped with ropes and ladders leading to the cage containing the light. Inside the cage there is an oak or mahogany chest containing rations, first-aid box, yellow flag—yellow is the colour most easily seen at sea—distress signals, drinking water, a torch and a whistle.

The floats and buoys are inspected, the first by the Air-Sea Rescue Service, the second by officials of Trinity House. They are useful, but being comparatively close to shore they are available only to pilots and crews whose aircraft alight near land. They can never be more than part of the answer to the problem.

Crews who come down on the sea some distance from our shores and are unable to reach a float or buoy must rely on the rations carried in the dinghies. What is the best kind of solid and liquid food is the constant study of the medical services of the Royal Navy and the Royal Air Force. Such food has to give the airman protection against the three foes lying in wait as for a prey—hunger, thirst and exposure. Of these by far the most formidable is the last. Hunger and thirst can be endured for many hours, even days, by men in the pink of physical condition—the examples already given in this narrative are proof of this—but the assaults of icy wave and icier wind on men in soaked flying clothes tossing upon the unrelenting waters of the North Sea or the North Atlantic will, in the end, overcome any protection which food or drink, however scientifically compounded, may be able to afford.

Rescue Craft

The third and fourth problems are how survivors are to be found and then how are they to be brought to land. Before describing the process it is necessary to know something of the air and surface craft used for the purpose.

Any aircraft available are used for the purpose of air search. Some of these are fitted to drop dinghies and other rescue equipment such as the Lindholme Rescue gear and the Thornaby Bag. The Lindholme Rescue gear has a dinghy similar to that carried by large bombers and can hold five or six men. The dinghy is dropped in conjunction with buoyant containers. Stowed in the containers are water, rations, first-aid kit, sleeping bags, chemically heated hot-water bottles and other comforts. The containers are attached to the dinghy by a long orange-coloured buoyant line. The rescue aircraft flies across wind and to leeward of the distressed crew and releases the components of the gear in rapid succession. The dinghy, which is in the centre of the line, inflates automatically on contact with the water. The distressed crew have therefore only to drift down wind in order to pick up the inter-connecting line, and having done so to haul themselves along to the dinghy. Having boarded it they haul in the containers, open them, help themselves to the contents and make themselves comfortable. The contents of the Thornaby Bag are much the same as those in the emergency pack stowed in the bomber itself.

The Royal Air Force surface craft consist of pinnaces, two types of high speed launches and seaplane tenders, the latter suitable for calm weather only. The naval craft are of considerable variety and range from motor-boats to converted private yachts. Details of these craft must for the present remain secret.

As has already been pointed out, in this matter of rescue the Royal Air Force and the Royal Navy work together, and they work in the closest harmony. This fact is of the first importance. The Royal Air Force find the airmen adrift on the ocean. The Royal Navy picks them up and brings them to land. The

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high speed Royal Air Force launches manned by Royal Air Force personnel, the motor-boats manned by naval ratings, the lifeboats with their volunteer crew of men of the life-boat service, the trawlers with their complement of fishermen, are each and all under the direct operational control of the Royal Navy, which will also divert any craft in the neighbourhood towards a dinghy. The air search is conducted by Fighter Command aircraft if the dinghy is near our coasts and by aircraft under the control of Coastal Command if the airmen have come down farther out.

This was not always so. The Royal Air Force has for some years had in its possession a number of launches, some of them of high speed, which have been in use at the various Royal Air Force stations, more particularly those belonging to Coastal Command. When war broke out, some of these craft were earmarked for the purpose of rescue. In the early days, when the only targets attacked by our bombers were warships in or near the harbours of the enemy, they were deemed adequate for the purpose. When, however, our attack on German land targets opened on the 11th May, 1940, and when by the middle of June that year France had collapsed and the Battle of Britain, which was to rise to a climax in August and September, had begun, an immediate expansion of the service became imperative.

Growing Needs: R.N. and R.A.F. Co-operate

The most pressing problem was to rescue fighter pilots engaged with the enemy over the south and south-east coasts of this island. For this purpose Fighter Command borrowed a number of Lysander aircraft from Army Co-operation Command. They were given fighter escort lest the enemy should interfere with them, and they went out after each engagement carrying rubber dinghies in their bomb racks which were dropped as close as possible to the airmen in distress. In those early days a rescue from the sea was a matter of great difficulty, for the pilot was not then provided with a dinghy attached to his person. Nevertheless, a certain measure of success was achieved by close co-operation with the Royal Navy.

A rescue service, operating mainly in the Dover area, was started towards the end of May, 1940. Special craft were not then available, and craft in active operations against the enemy had therefore to be used, despite the fact that they could legitimately be made the object of enemy aircraft attack. Vessels of this kind continued to be used throughout that year, for such other craft as could be spared for the purpose of rescue were, in many cases, found to be unsuitable or unreliable. By the end of October, 1940, when the Battle of Britain had been won, some thirty airmen, most of them British or Allies, had been rescued. The boats engaged in this work were frequently attacked by enemy aircraft. Some were damaged and casualties were incurred, though at one period there seemed to be an unwritten law that rescue craft, both our own and the enemy's, should be immune from attack provided they kept to their own part of the channel.

Meanwhile an Air-Sea Rescue Service had come into operation under the control of Coastal Command. Aircraft of Bomber Command were now in full operation against the enemy in north and north-western Germany and were soon to bomb Berlin. Aircraft of Coastal Command had opened their attack on fringe targets from Trondheim to Bordeaux. The number of air-crews falling into the sea was inevitably beginning to increase with the development of the attack. Their rescue became of the first importance. Speed is, and must always be, a vital factor. It was therefore decided that those controlling the Air-Sea Rescue Service should do so in conditions which would make it possible for the Royal Navy and the Royal Air Force to work

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in the closest co-operation. This part of the task was easy. The Area Combined Headquarters of the Groups of Coastal Command have, from the beginning of this war, been manned jointly by the Royal Navy and the Royal Air Force. Here then were the places ready to hand in which those controlling Air-Sea Rescue would obviously be able to fulfil their task with the minimum of delay. One Squadron Leader and three watch-keepers were accordingly attached to each Group of Coastal Command and they set to work as follows.

When an S.O.S. is Received

As soon as an S.O.S. is received from an aircraft, whoever picks it up, whether it is the aircraft's own station or its own Group Headquarters, it is immediately communicated by telephone to the nearest Area Combined Headquarters. There it is handed at once to the control staff who get into touch with the Controller of the Group in whose area the aircraft is reported to be. The Group Controller in his turn informs the nearest Coastal Command station and a reconnaissance aircraft is despatched immediately or as soon as circumstances permit. While these steps are being taken by the officers of the Royal Air Force, those of the Royal Navy are taking similar steps. Area Combined Headquarters warns the nearest Naval Station where a launch or other rescue craft are available. These put to sea as soon as possible and are directed to the dinghy by messages received from the reconnaissance aircraft. Rescue vessels of various kinds have been stationed all along our coasts. The crews of all aircraft have been instructed if in trouble to send out the S.O.S. signal as early as possible, and to continue to do so at frequent intervals, giving their position at the same time. The object of this procedure is to obtain a line of bearings which will simplify the search conducted by the aircraft, and also make it possible to obtain a cross-check on its position by means of radiolocation.

This rescue procedure may sound somewhat complicated: but in practice, under most conditions, it is quick and effective. For example, suppose a Wellington returning from an attack on Bremen is forced down over the North Sea through lack of petrol or some other cause. Its crew usually know some minutes beforehand that the aircraft will have to be ditched. The S.O.S. is sent out and may be continued for ten or fifteen minutes, sometimes for considerably longer. The S.O.S. is picked up by the bomber station or the Headquarters of the bomber group to which the Wellington belongs. Headquarters then flash it at once to the nearest Area Combined Headquarters on the east coast. Within a matter of seconds a Coastal Command station has been warned and the crew of the rescue aircraft have been summoned to Station Headquarters where they are immediately briefed, being told the position of the Wellington very often while it is still in the air.

On every Coastal Command station there is always an aircraft and a crew at instant readiness for the purpose of rescue. They set off, carrying with them a Lindholme Dinghy or a Thornaby Bag containing food, drink, clothing and other necessities. Setting course for the estimated position, the rescue aircraft arrives over the dinghy, drops the bag or the dinghy as close as possible down wind so that the distressed crew will drift towards it. It is essential to drop all rescue gear down wind, because rubber dinghies are so light that they cannot be paddled against the wind and waves. As soon as the crew in the water have picked up the dinghy or the bag, they secure it to their own dinghy and then await the arrival of the launch while the rescuing aircraft circles above them. If the distance is great and the launch takes, therefore, some time to arrive on the scene, the rescue aircraft is relieved by other aircraft in order to ensure that a continuous watch is kept until those in the sea are

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rescued. They are then brought into the nearest port. This is the ideal rescue.

A Whitley returning from Italy found itself off course owing to adverse weather and unreliable wireless. The pilot knew it was running out of petrol and would probably have to ditch. Just before the engines faded, the wireless operator succeeded in sending an S.O.S. which enabled the Whitley to be plotted some forty miles off Plymouth. There was a slight southerly wind ; the sea was calm ; there was little moon and no mist. The pilot made a successful tail-down landing after switching on his landing lights. The dinghy was inflated without incident. All the crew scrambled aboard, the only mishap being an injury to the tail gunner, who broke his arm when the Whitley hit the water. They entered the dinghy at 4.30 in the morning. They were found by a Lysander which had gone out immediately to search for them at 10.05 hours, five hours and thirty-five minutes after ditching. The Lysander approached them with the sun behind it and its pilot saw them easily. They had used Fluorescine to colour the sea as soon as daylight appeared. The launch arrived at 14.30 hours and picked them up.

Seven Minutes to Sink

A Wellington attacked the Neu-Koln gasworks in Berlin from a height of 3,000 feet and was severely damaged by heavy and light flak. Its speed was thus reduced and a strong head-wind reduced it still further. It ran out of petrol 130 miles due east of the Firth of Forth at 6.45 on the morning of the 3rd September after having been in the air for twelve hours. " When I realised," says the pilot in his report, " that we should be unable to reach the Scottish coast, I instructed the wireless operator to send an S.O.S., which was received, and our position was plotted until the aircraft sank—that is, for the last 30 minutes of our flight." The aircraft took about seven minutes to sink and during this time the dinghy was successfully launched, but the observer, who was the first into it, was swept out again by the very high seas and drowned. The others entered it and waited until midday, when a Hudson was seen. A rocket was fired, the Hudson spotted the dinghy immediately and " gave our position to the shore by radio and a Royal Air Force boat was despatched to pick us up. The Hudson then lost sight of us and we were again found at about 17.30 hours by a Sunderland flying boat. This stayed over us dropping sea markers, until we were picked up by the rescue boat at 19.00 hours."

Fog and High Seas

Unfortunately, conditions can rarely be ideal, and if the procedure already described was the only one to be practised the number of rescues would be far smaller than is the case. It frequently happens that the reconnaissance aircraft is unable to find the dinghy, either because an S.O.S. has not been sent out or has not been received, or because the position given has been inaccurate, or because the weather is bad. It is hard to exaggerate the importance of weather conditions in all rescue work. In bright sunshine and a calm sea a dinghy can only be seen from a short distance, but in other conditions, and if the clouds come down and fog drapes the surface of the water, to spot it becomes almost impossible. In a storm, with white caps cresting the waves, the dinghy may be practically indistinguishable from the blown spume. Moreover, the dinghy itself is subject to the vagaries of tide and winds. Thus, even though the position where the aircraft landed in the sea may have been correctly sent by the wireless operator, by the time the rescue aircraft can get to the spot the dinghy may have drifted and be very hard to find.

Perhaps the wireless of the returning bomber has been hit by flak or a cannon shell from an enemy fighter, and is unserviceable. In that

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O.S. S.O.S. RECEIVED R.A.F. LAUNCH SPEEDS OUT . .





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UT LOOK-OUT ON THE LAUNCH SEARCH FROM THE AIR

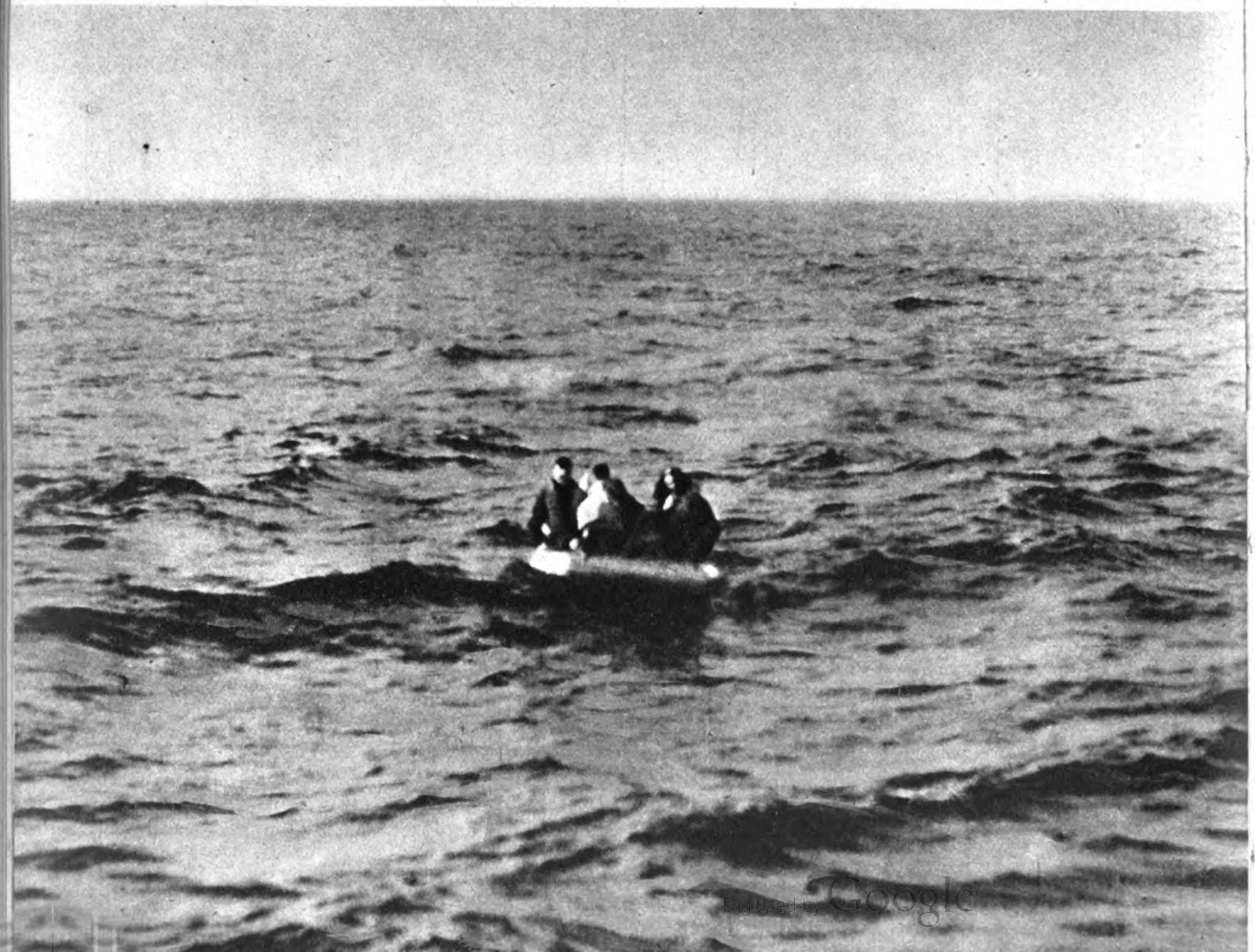


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THERE THEY ARE LYSANDER DROPS RESCUE-GEAR SAVED!



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case it is only possible to put the rescue service into operation when the aircraft has been reported overdue. This means an inevitable delay of perhaps several hours. As soon as an aircraft is deemed overdue, a search is organised. It is carried out by reconnaissance aircraft over a wide area, sometimes as many as thirty being used for this purpose. They may have to maintain a continuous patrol in daylight for several days. At the same time, the Navy carry out a corresponding search with surface craft over the widest possible area. Such searches are only abandoned when the crew are rescued or when all hope is gone. Here are some typical examples.

A Whitley returning from Berlin encountered enemy night fighters in the region of Hamburg. Both engines were hit by machine-gun bullets. The port engine failed and the pilot steered for home, maintaining height on the starboard engine. At 03.20 hours, when still ninety miles from the Humber, the starboard engine seized and caught fire. It was a very dark night. By the time the aircraft struck the water the fuselage and starboard main plane were on fire. The aircraft floated like this for two minutes and then blew up. . . . The dinghy inflated upside down. . . . The crew were all aboard the dinghy within fifty seconds and had paddled thirty yards away. . . . They remained in the dinghy from 03.30 hours on the 18th April to 22.00 hours on the 20th April. . . . They managed to pull in the emergency pack, but on hauling it aboard discovered that it contained only two marine distress signals; everything else had fallen out of it.

For the first two days the sea was extremely rough . . . and they considered it too dangerous to endeavour to right the dinghy. On the third day the sea subsided, but by then they were too weak to risk getting into the sea and back to the dinghy. During the whole period a watch of two men was kept who paddled westward and baled with shoes and an empty Very pistol cartridge. . . . During the first day a number of searching aircraft were observed. One Whitley actually located them and then lost them again in the high seas. In trying to regain contact with this aircraft the distress signals were used.

That night and all the next day nothing was seen. The seas remained high and the crew continued paddling west in watches of two. The following night the wind lessened and the seas subsided. The next day a number of aircraft were observed. Eventually a Hudson spotted them. It was then about 20.00 hours. The Hudson circled them, dropping supplies and provisions. It continued circling, and when night fell it dropped flame floats. At approximately 21.10 hours a Hampden came up and dropped a Lindholme Rescue gear consisting of four containers of provisions and warm clothing. The crew clambered into the rescue dinghy. By 22.30 hours it was very dark, but they heard a Royal Air Force high-speed launch approaching the flame floats. They shouted and were picked up and taken to hospital, where they arrived at dawn.

For Forty-three Hours they Searched

A Blenheim aircraft, P. for Peter, doing navigational exercises over the North Sea, reported a dinghy some fifty miles from our coasts. P. for Peter remained over the dinghy while a seaplane tender was sent to the spot. P. for Peter was presently relieved by U. for Uncle. While this was going on H. for Harry, another Blenheim also doing navigational exercises, was reported overdue, and by 12.30 hours to be missing. It was thought that the dinghy found by P. for Peter contained the crew of H. for Harry. At 14.35 hours the seaplane tender arrived, picked up the three men and took them back to shore. They were very exhausted, and it was found that they were not the crew of H. for Harry, but of another Blenheim which had crashed into the sea the previous day, and had been sought for vainly

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by nine Blenheims, two high-speed launches and another rescue craft.

By the time the identity of the rescued men had been established it was late afternoon, and the crew of H. for Harry were still not found. Five Blenheims were sent out at 17.15, flying on parallel tracks over the course which should have been flown by H. for Harry. All aircraft in the vicinity were warned to look out for the dinghy. By nightfall, however, nothing had been seen. Sun and haze had reduced visibility throughout that day to about a mile, but the sea was fairly calm. All available vessels were sent to join in the search, and when dawn broke on the 21st June it was renewed by air and carried on until shortly after noon, when all the aircraft engaged reported that they had seen nothing.

The weather was still very hazy. The position of the dinghy was not known and further search seemed useless, when a Blenheim on navigational exercises reported at 15.10 that he was over a dinghy containing three men. The position was at once plotted, a seaplane tender was sent out and an aircraft sent to relieve the Blenheim which had found the dinghy and to pilot the rescue craft to the spot. Visibility, however, became worse. The sea became covered with white horses, making it difficult to keep the dinghy in sight, and at 16.45 hours it was lost. The search continued and at 19.00 hours, when it was getting dusk, another Blenheim, T. for Tommy, sighted a partially submerged dinghy. By this time the seaplane tender was in the vicinity and picked up the men in it. They proved, however, not to be the crew of H. for Harry but two of the crew of a Wellington which had been lost thirteen days before. The men were dead.

By this time night had fallen, but the search went on, both by aircraft and by launch. Hampdens went out carrying Lindholme Dinghies. The crew of the aircraft which had first spotted the dinghy of H. for Harry took off in another aircraft to search for their comrades. After an hour they developed engine trouble and only just succeeded in making land. Nothing was seen of the dinghy during the night and a Hampden took off again at earliest dawn to make a rendezvous with two high-speed launches, which had put to sea some hours before to reach the approximate position where the dinghy had been last spotted. The Hampden saw the dinghy, and the high-speed launch picked up the men at 08.30 hours. They proved to be the long lost crew of H. for Harry and were landed in an exhausted condition. The seaplane tender, which had searched throughout the night, ran out of fuel and was refuelled at sea. It then returned with the bodies of the two dead men.

So ended the search. It lasted for forty-three hours and ten minutes. Aircraft from two different stations, aided by rescue craft from two harbours, had carried it out. The story of it has been told at some length so that the difficulties facing the rescue services and their determination to overcome them may be realised.

These examples of rescue show one thing clearly. Though the general pattern may be the same, wind and weather break it up so that each individual rescue has its own special characteristics, its own particular problems. These have to be solved on the spot and with speed. The importance of speed cannot be over-emphasised. It makes just the difference between life and death.

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4. The Rescue Service Grows

THE SERVICE has been carried on, on the lines described, with slow but ever-increasing progress. Throughout the autumn and winter of 1940 the number of rescues gradually increased. In the south the achievement of air superiority, first over our own coasts and then over the channel, the opening of offensive sweeps over Northern France by fighters and the attacks by Coastal and Bomber Commands on enemy shipping led to an intensification of the organisation. During the considerable fighter activities of June and July, for example, the rescue craft in and about the channel were at readiness or on patrol at sea thirty-seven out of forty-five days, sometimes for as much as twelve hours at a time. Between the 1st June and the 30th September, 1941, some sixty successful rescues were made in this area, and this total does not include fifteen airmen who were found to have died of wounds or injuries when their dinghies were picked up.

Just as each rescue has its own particular problem to be faced and overcome by the rescuers on the spot, administrative and material problems are constantly confronting those in authority at the centre of the organisation. To take first the air side. No special aircraft were allocated originally for the purpose of air search except the Lysanders, which have been in constant use by Fighter Command since the opening of the Battle of Britain. Now special rescue aircraft squadrons have been formed. As has already been said, on all stations of Coastal Command and on some stations of Bomber Command whose location makes them a convenient place from which to operate, one aircraft or flying boat with a crew stands by in readiness to go out. Coastal Command, through its Area Combined Headquarters, has full operational control over these aircraft as well as over any others which may be pressed into service. Thus, Hampdens of Bomber Command, which have been used from the very beginning for dropping the Lindholme Dinghy, have proved most suitable and continue to be used.

The operation of these aircraft gives rise to more problems. For example, the farther a searching aircraft has to fly the more likelihood there is of error. It must not be forgotten that what has to be sought is a very small rubber dinghy, a minute shape upon the grey wastes of the sea. Even a slight error in navigation is cumulative, and this applies alike to the aircraft ditched and to the reconnaissance aircraft searching for its crew.

There is finally the problem of visibility which confronts both air and sea craft alike. The vagaries of the weather over the North Sea and the North Atlantic are very great and very troublesome. Its fogs and mists have many times in our history caused an engagement to be broken off which might have ended in victory, or a ship to be missed by the lifeboats seeking her in the murk and gloom. James, Duke of York, Lord High Admiral, searching for the Dutch; Admiral Beatty, searching for Von Scheer at Jutland; Air Chief Marshal Sir Frederick Bowhill, searching for the *Deutschland*—each in turn has been baffled by the veils of fog enshrouding our waters. Flying Officer X. or Sergeant Pilot Y., peering through the windscreen of a Hudson to catch a glimpse of an object 5 feet in diameter, must sometimes fail. Modern science has made great progress. The appliances on board their Hudson have simplified the problem. They have not yet solved it.

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Safe aboard the launch, rescued airmen enjoy a tot of rum and a cigarette.

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The difficulties confronting the naval craft are even greater. While a heavy bomber like the Hampden or a reconnaissance aircraft like the Anson or the Hudson is prevented from flying only by severe icing conditions or by complete lack of visibility, the choice by the Royal Navy of the craft to be used for a rescue is more often than not dictated by the weather and the distance that craft has to travel. Thus in calm weather a high-speed motor boat can operate with success and despatch. In heavy weather, however, a craft of more solid construction and therefore of slower speed has to be used, and in violent storms the Lifeboat Service or slow-moving trawlers must be called upon.

Dispositions of the Rescue Forces

Generally speaking, the farther out a rescue has to be made, the more difficult the problem that the Naval Authorities have to face. Moreover, the number of light craft is limited. This is a question of supply. However high may be the value put upon the lives of trained men, the proportion of the national effort which can rightly be expended in time of war purely on rescue work must be considered. The number of slipways, the number of men, the amount of material available for the construction of light craft are limited, and these vessels are primarily intended, as are our aircraft, for offensive purposes against the enemy. Their crews have to be trained. Facilities for repair and refitting have to be provided. The position and size of the harbours they use must be considered.

All these are limiting factors, but perhaps the problem which exercises the rescue service more than any other is where such craft as are available—and their number is gradually increasing—are to be stationed. It is, for example, useless to put all the high-speed craft in one place and all the medium and slow-speed craft in another. They have to be mixed in the most economical and at the same time the most efficient proportion. The "density" area, that is to say the place where the largest number of rescues will probably have to be effected, must be plotted.

By the end of 1940 it was felt that the efficiency of the rescue services could be still further increased if a central organisation were set up to grapple with all these problems of co-ordination and equipment. The Directorate of Air-Sea Rescue Services was accordingly established by the Air Ministry "in order to keep in close touch with the authorities concerned in search activities."

The task of the Directorate is primarily one of co-ordination. It concerns itself with helping the machinery already existing to work satisfactorily. It is in the closest touch not only with Area Combined Headquarters, where its officers are on duty day and night, but also with the Ministry of Aircraft Production and other Ministries which have to provide the dinghies, the equipment, the food, and the craft, all playing their part in the work of rescue. Its central office keeps statistics of the density of casualties. It concerns itself with the peak areas—that is to say, areas where rescue has most often to be achieved or attempted, with the type of boats required, with the organisation of help from outside sources, with the floating rescue gear and the surface craft.

During the period of its existence the number of rescues effected, though far from what it would consider to be its ideal, has steadily increased. It would be misleading to quote figures, for it is impossible, without giving valuable information to the enemy, to compare the number of rescues successfully carried out with the number of aircraft operating in a given period.

Peril on the Sea

So that the working of the Air-Sea Rescue Services may be more fully understood, here are a number of stories taken from official

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reports, chosen to illustrate in some degree the perils which airmen who fall into the sea have to face and overcome.

To take Fighter aircraft first. A Spitfire received several hits in the petrol tanks. It became uncontrollable and flung the pilot out. The next thing he remembers is falling quite clear from the machine and unhurt. He pulled the rip cord when at 28,000 feet and, stimulated by a recent discussion in the Mess on how long it would take to fall to ground level from that height, he carefully timed his descent. It took twenty-four and a half minutes. While in the air he took both his boots off and dropped them one after the other to help in estimating the final hundred feet or so of drop. He released his parachute harness as his feet touched the water; his "Mae West" had been punctured and could not be inflated—this took place during the Battle of Britain, before Fighter Pilots were provided with the "K" type of dinghy—but his parachute had been seen from the land and a motor launch eventually picked him up, after he had been two hours in the water.

A Hurricane, having run out of ammunition, was shot down in mid-Channel. "I stayed in as long as I could," says the pilot, "but finally, seeing flames and feeling uncomfortably hot, I decided to get out." When he hit the water the shroud lines of his parachute fell on top of him, as there was no wind. The dinghy pack sank, but remained attached to him by the lead. "I had great difficulty in pulling up the dinghy because I was entangled in the parachute shroud lines. Each time I tried to pull it up those lines tightened round my shoulders." He eventually got the dinghy free and blew it up. "I could see no land either side of me and started paddling with my hands towards the English coast, using the sun as a guide . . .

"After about half an hour I saw a bi-plane approaching from France flying at sea level escorted by six single-seater aircraft. They flew over me and I perceived that they were Me. 109's escorting a Heinkel Float Plane. I at once got out of the dinghy and made myself scarce in the water about twenty yards away. The whole formation then turned back towards the French coast. In the meantime I had seen a Lysander several miles away. Presently it came towards me and I saw that it was escorted by six Spitfires. The next thing that happened was that they attacked some Me. 109's at about 3,000 feet, one of which went into the sea immediately. A moment later, a number of Hurricanes arrived and joined in the fray. Six of the Spitfires attacked some more 109's and the Heinkel Float Plane, which fell into the sea and blew up, leaving a column of black smoke. I also saw a Spitfire go into the sea; it flicked over on its back just above the water and went straight in. I did not see anyone bale out. Soon afterwards I was alone again and continued to paddle towards England until I could see the coast line. Then I saw two high-speed launches on patrol, but they did not see me. One of them came fairly close and I managed to attract his attention by splashing and shouting, for I had no whistle. The launch came up. I was hauled on board and taken to Dover, none the worse for my adventures."

"The Captain was the Last to Leave"

Air crews from bombers also have their stories to tell. A Whitley with its wireless out of action lost its way returning from a raid on Cologne. The captain warned his crew, an hour before, that they would probably have to ditch. The sea was rough, the wind was strong, and when they ditched the aircraft they were some thirty miles off the East Coast. The pilot made a perfect tail-down landing. The shock was not great. No one was injured. When the Whitley came to rest it was on a level keel with wings and tail submerged. The lights had been left on, but they suddenly failed. This added to the difficulties of the

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crew, because their eyes were not adjusted to darkness. The dinghy valise was thrown out, the cord pulled and the dinghy inflated immediately; but it inflated upside down.

Three of the crew scrambled on to the dinghy —this in spite of there being nothing to catch hold of—and they got the fourth member aboard with some difficulty. The captain was the last to leave the aircraft. They could not see him in the darkness. He was not saved. The crew were in the dinghy for eight hours. It proved impossible to turn it right way up, so that the equipment inside it could not be reached. One of the crew, however, had taken the Very pistol and cartridges. A Hudson flew over them during the first hour, but did not see the signal which they fired. After seven hours a Blenheim searching for them at 200 feet spotted them. The circling Blenheim was seen by a trawler which made for the spot and rescued the crew.

Another North Sea rescue concerns a Wellington, an engine of which suddenly failed when the crew was at 4,500 feet over the sea. It proved impossible to maintain height with the remaining engine. The crew had ten minutes' warning that the pilot proposed to land in the sea. Immediately they touched the surface, water came rushing in through the side windows and the top opening of the cockpit. The crew were uninjured except the rear gunner, whose hand was torn by the rope to which he was clinging, and another member of the crew who was standing up and broke his collarbone. "The first man out of the aircraft reached for the dinghy, which had already come out and was partially inflated." Inflation was impeded by a tangle of cords and the broken aerial wire. In cutting them, they also cut the ropes securing the distress signals and paddle gloves, and these were lost. Within five minutes all six were in the dinghy and had pushed off. They remained in it for forty-eight hours. Finally they attracted the attention of a convoy of ships by shouting. These were passing them in the moonlight. They were picked up safely.

A Wellington engaged on a raid on Berlin was hit by flak about thirty miles from the city. "We heard a crack," says the pilot, "and everything in the aircraft shook." They carried on, however, and dropped their high explosive bombs on the German capital. Cloud then obscured the target before they could get rid of their incendiaries, and these they kept, intending to find another target on the way home. Before they could drop them, however, they were hit again by flak. The incendiaries caught fire and set light to the Wellington, which was then at 1,200 feet. The aircraft was soon ablaze along the whole line of its bomb-racks. The pilot tried in vain to jettison the incendiaries. The fire was tackled with the fire extinguisher and the Thermos flasks of coffee. Smoke in the aircraft was at times so thick that the pilot had to put his head out of the window in order to breathe. Eventually the fire was brought under control, though the incendiaries were still alight. The bomb doors were opened and closed seven times in an unsuccessful attempt to put them out.

"A Buoy came Swishing By"

They crossed the coast at only 1,000 feet. Twenty-five minutes later they ran out of petrol, after having flown for three hours on fire. The Wellington had been so damaged that a tail-down landing into the sea was impossible. It entered the water nose down and submerged almost immediately, but the empty petrol tanks pulled it to the surface. The flotation gear had been burnt away. The dinghy was flung out: it inflated and the crew clambered on board. The pilot was the only one injured.

They had landed on the sea in the small hours of Saturday morning. All that day and night they paddled in good weather, but on Sunday the weather changed. Big seas

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got up. The dinghy, however, rode them easily, though constant baling was necessary. The crew discussed the amount of sick leave they would be granted when they were rescued. They had food and drink to last, with care, for six days. On the morning of Monday, " We saw a buoy come swishing by. It seemed to be moving at a devil of a speed with the tide. Seeing the buoy sort of bucked things up." Then they saw the coast. It was the Isle of Wight. They paddled eventually to within twenty yards of the shore and were then washed into the arms of rescuers who had waded out to them.

Ditched in Mid-Atlantic

Naval airmen from our Aircraft Carriers have also to be rescued, though in their case the task is much harder because they usually come down many miles out to sea.

Here are the adventures of a pilot and observer who ditched in the Atlantic. The failure of the wireless made it impossible for the Fulmar they were flying to get back to the Aircraft Carrier, whose position was not known. They carried on and eventually, having to come down, hopped over the wave crests and came to rest on a wave. The pilot " dived into the water, recovered the dinghy, spread it out on the main plane and helped the observer, who was rather dazed, to board it." In addition to the dinghy fitted to the aircraft, the pilot was also carrying a " K " type dinghy which he had borrowed from a Fighter Pilot of the R.A.F.

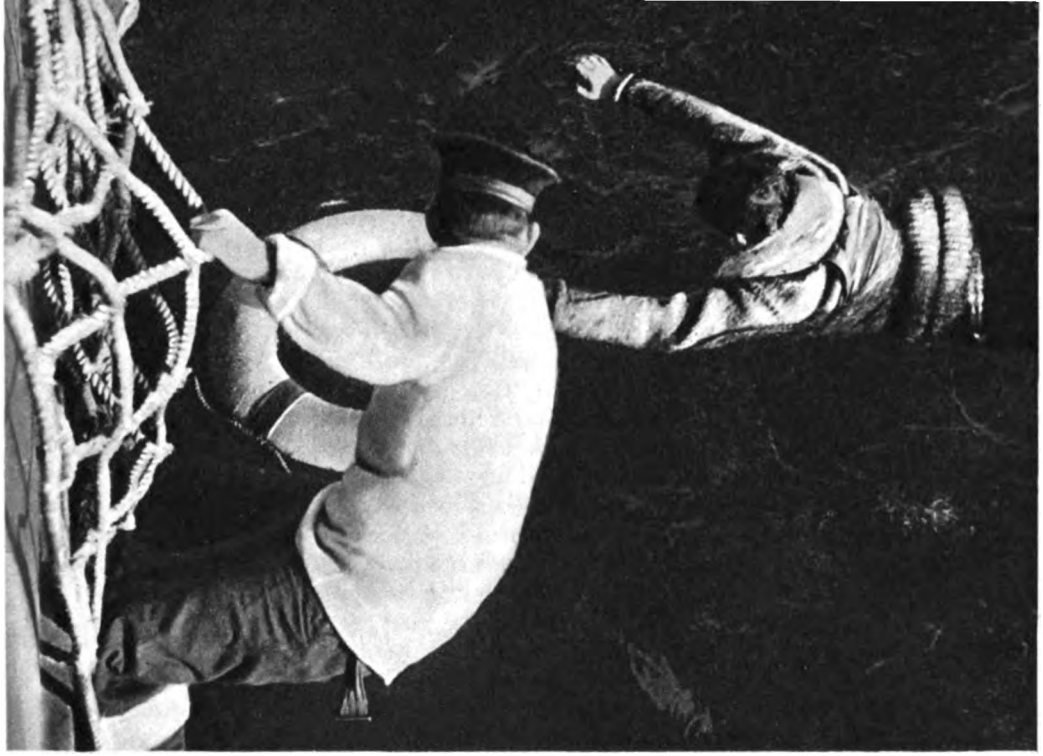
Once they had got into their dinghy, the pilot opened the " K " dinghy and used it as a roof. Both men lay flat in their own dinghy and held the " K " dinghy tight down by means of the hand grips. In this way they were able to keep out the oncoming seas, whose wave-crests towered above them to a height of more than 50 feet. They remained in this roofed dinghy for the remainder of that night and the next day and all the following night, being picked up eventually by a Canadian vessel.

Aircraft piloted by pupils and their instructors in the later stage of their training fly many hours over the sea. Sometimes their engines fail and they are compelled to ditch.

An aircraft of this kind, a Wellington, piloted by pupils with an instructor, fell into the sea fifty miles off the north-east coast of Scotland. In the crash the instructor was knocked unconscious and the only other experienced member of the crew, the wireless operator, received injuries which cut open his face and rendered him unconscious also. One of the pupils put the captain in the dinghy, and another the wireless operator. The pupils carried out the dinghy drill in the manner prescribed. They had practised it only a day before. They were successfully rescued within half an hour. " It speaks highly of the training and behaviour of this particular crew," says the Official Report, " when it is realised that the instructor-captain and wireless operator were rendered unconscious and were rescued by a pupil crew on their first cross-country flight."

Here is what happened to an aircraft of Coastal Command. An Anson was on patrol looking for a vessel. About half-past eight in the morning the second pilot, who was flying the aircraft, was ordered to send a visual signal to a ship. " He rose, turned and stepped out of his seat," reported the captain of the aircraft. " I went backwards over mine. The aircraft lurched suddenly and he tripped, knocking me backwards in surprise. I scrambled over him into the control seat. The machine was diving and turning to starboard in a vertical bank. . . . When I succeeded in levelling out, our height was less than a hundred feet and we were still sinking. I shouted, ' Hold tight and throttle back the engine.' The tail hit the water. I hoped we were not sinking. The next thing I remembered was Sergeant X. shaking me and shout-

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A helping hand from the Navy

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ing, 'Wake up, Jock, the others are out, go through the side.'" The Anson sank so quickly that the crew, who had had no time to prepare for landing in the sea, were unable to get at the dinghy. Only the author of the report was saved. "If it had not been for Sergeant X., I would have gone down with the aircraft," the report concludes.

A Pigeon Saved Them

Another rescue, in which a pigeon played an important part, must also be recorded. In the late afternoon of 23rd February, 1942, a Beaufort developed engine trouble and its captain was compelled to put it down in the sea at very short notice. The wireless operator had only just time to send out the aircraft's call sign before it hit the waves. The dinghy broke loose and drifted away, but the crew succeeded in getting hold of it and climbing on board before the Beaufort sank. One of the pigeons broke out of the container and "took off before we were able to fix a message to her." The staff of the Operations Room at base had little to guide them, but the one weak signal received just before the Beaufort crashed. At first light next day a search was carried out over an area about 70 miles square. The aircraft conducting it had been in the air for about an hour when the Operations Room received a telephone call from a civilian pigeon-fancier reporting that one of his pigeons, which he had lent to the Royal Air Force, had just returned, wet and covered with oil. He gave its code number, from which the station identified it as one of the pigeons carried by the Beaufort for which search was being made. No message was attached to the bird, but the station navigator, assisted by the civilian owner of the pigeon, worked out the bird's probable cruising speed and thus obtained a cross-check on the distance from land from the spot at which it had been released. The calculation thus made was transmitted to the searching aircraft, which found the crew within twenty minutes. They were subsequently picked up by two launches converging on the spot from bases seventy-five miles apart. The pigeon had crossed about a hundred miles of sea.

All out to the rescue—a Royal Navy launch.



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5. All Hands to the Rescue

IT SHOULD be clear by now that the Rescue Services make use of any and every aid that can be pressed into service. Rowing boat, fishing boat—such as the *Pansy*, whose skipper cut away his nets and steamed to the help of three airmen whom he pulled from the sea, drifter, trawler, patrol boat, examination vessel, lifeboat, minesweeper, boom defence vessel, motor boat of every service class, and destroyer—all have made rescues during the last twelve months.

The use of all available means of rescue is not confined to the aircraft and surface craft. The same principle is applied to persons. Anybody may be able to help—coast-guards, sentries, children at play on the sands and beaches of England, shepherds watching their flocks on the South Downs, courting couples—anyone in fact who may be looking over the sea from some point upon our coasts. Someone may see a parachute floating down towards the waves or a distress rocket or a floating light, or an aircraft entering the sea. Perhaps it is a bomber coming back from an attack on a target situated in the heart of the enemy's country. It may be an aircraft flown by a crew in the later stages of their operational training.

Whatever it is, it is essential to know what to do and to do it quickly. If the person seeing the parachute or the flare or the aircraft is a member of the Royal Observer Corps, he has had special instructions. He must at once telephone to the Corps centre, being careful in his message to note the time and the exact position on the squared map which he is using in his post. The Royal Observer Corps Headquarters are in close touch with the nearest Fighter Group and, as soon as the Corps receive the message, they will put the Air-Sea Rescue Service into operation by getting in touch with the nearest Area Combined Headquarters. If it be a coast-guard who sees something, he will ring up the nearest Naval Officer in Charge and give the bearing and distance.

If an ordinary person, yourself for example, sees a parachute or a flare or a dinghy he should first notice the time, then his own position, thirdly the direction of the object and its distance away. This is very often difficult to judge, but an approximate distance is of value. As soon as all this is clear in the mind, the observer should run to the telephone, ring up the nearest Police Station and make a report on the lines indicated. He should then go back to his post of observation and carry on as long as he can see the object he has reported.

The necessity for each individual to use his judgment is evident. An aircraft crashed into the sea some five hundred yards from the coast. Rescue action was taken immediately, it being then some half-hour before noon. The sea was extremely rough and the local launch was unable to put to sea. A trawler and lifeboat tried from another place farther off and they, too, were forced to return. A second lifeboat eventually succeeded in putting to sea, but did not arrive until the afternoon—too late to be of any use. Meanwhile an aircraft had dropped "Mae Wests" and motor tyres as near the crashed aircraft as possible, but they were at once carried off by the huge waves.

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While the Rescue Services were thus doing their utmost, several attempts were made by people from the shore in boats, which were all overturned or swamped. Gallant efforts were made by soldiers, by two boys in a skiff and by an officer of the Merchant Navy. All was in vain. The Army lost an officer, one Regimental Sergeant-Major and four privates, the Royal Air Force two aircraftmen; and there were also drowned a coast-guard, a constable and the officer of the Merchant Navy. Altogether eleven persons lost their lives in seeking to rescue the crew of three, who were also drowned. This is a sad story. It shows great gallantry, but its moral is obvious.

The Tradition of Life-Saving

On another occasion a fighter aircraft crashed into the sea. Two soldiers, seeing the pilot swimming about in the water about half a mile away, stripped off their clothes and swam to him. One of them, not being a very strong swimmer, with great good sense turned back. The second carried on and was presently joined by three other men. "Together we helped the pilot along by getting on each side of him, putting his arms around our shoulders and swimming the breast stroke. After a couple of minutes we were joined by several other swimmers and we all helped one another." The pilot was brought in safely.

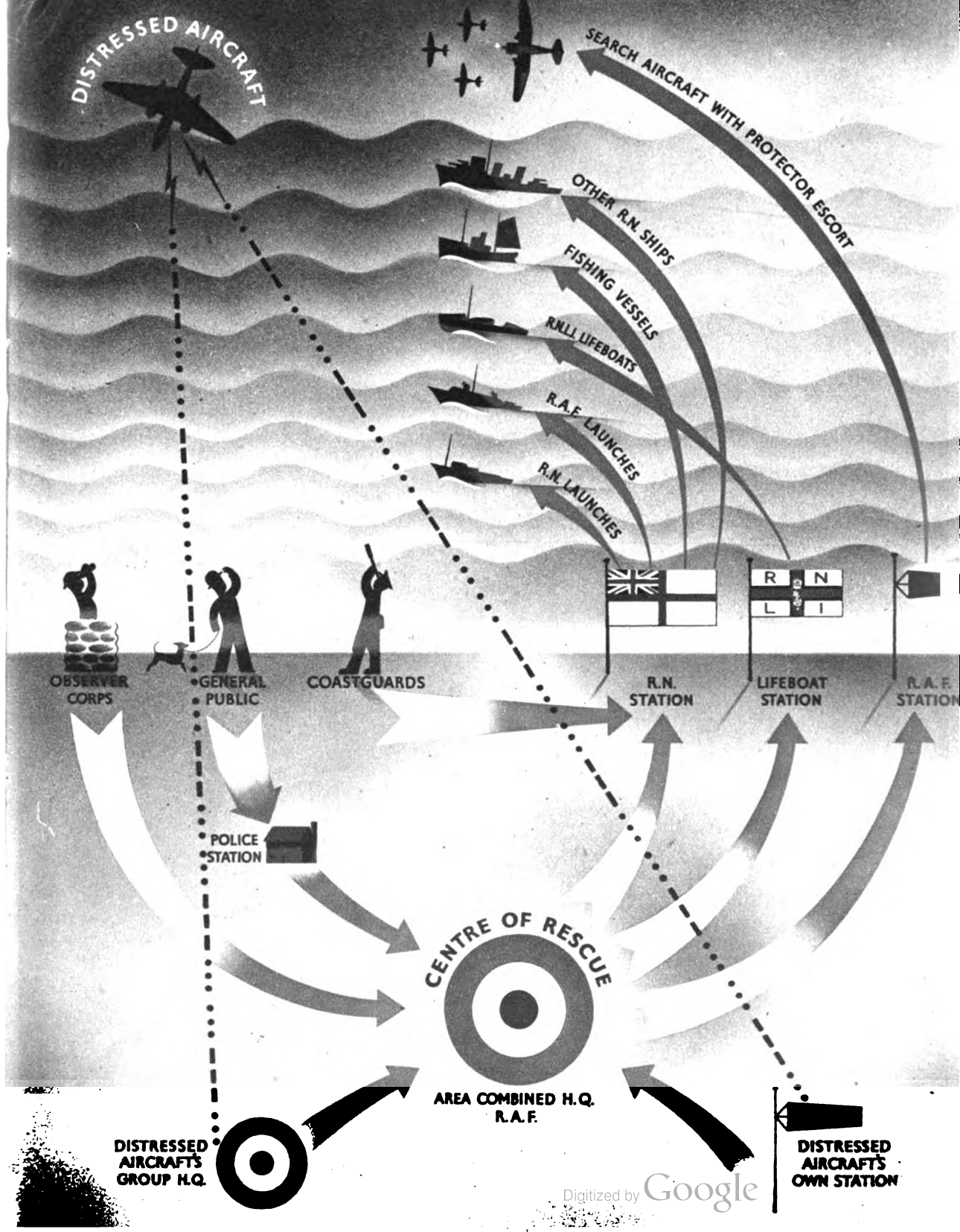
Here is another example of prompt action. The landlord of an inn in a small town on the east coast of England drew a pint of beer and held it up in the light to see if it was clear. As he raised his eyes he could see a speck on the sea. He put down the pint, picked up a telescope and perceived that the speck was a dinghy. A lifeboat man was having a drink at the bar. The landlord told him what he had seen and in a few minutes the lifeboat was launched and subsequently rescued five exhausted Polish airmen.

The importance of keeping your head, of organising, of getting into touch with the nearest people best capable of doing the job, cannot be exaggerated.

Finally, a word about the Directorate-General of Aircraft Safety in the Air Ministry. It has a wider responsibility than Air-Sea Rescue alone, for it is concerned with the safety of all aircrews whether they are in the air or have come down in the sea. Its primary object is to help aircraft in distress to reach home, be they bombers or fighters returning from a raid on the enemy, or a general reconnaissance of Coastal Command on the way back from an anti-submarine patrol over the Atlantic or a strike against an enemy ship. How the system works must remain a secret for the moment. If it is unable to bring back the aircraft by any of the secret means at its disposal, then the rescue procedure described in this account is put into immediate operation.

Here then is the story of Air-Sea Rescue. It is not complete because it is not ended. It will not end till victory is won. Many an airman has been rescued. Many more will be rescued. Some have not been. How many, the Air-Sea Rescue organisation knows. It is this knowledge which spurs them on, from the Directorate in London to the men in the launches. They are not contented men, and they will not be contented until they have devised a system so perfect that the crew of every aircraft falling into the sea will be brought back in safety to this country. That is their sole aim and object. It has not been achieved. Perhaps it never will be; but, as the curve of rescues on the graph hanging upon the wall in the central office of the organisation rises slowly upward, the hearts of all concerned in this great and not unworthy task rise with it. Air-Sea Rescue is still young, but it has a great tradition behind it—a tradition that has grown up from the day on which men first began to sail the seas—the tradition that no one shall be left to drown if any human means can be found to save him.

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